WTI Part No. 13046
Rev. A

APS Series

Asynchronous Port Switches

Firmware Version 2.0 and Higher

User's Guide

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Warnings and Cautions:

No Serviceable Parts Inside; Authorized Service Personnel Only

Do not attempt to repair or service this device yourself. Internal components must be serviced by authorized personnel only.

Shock Hazard - Do Not Enter
Choc Hasard - N'entrent
Schocke Hazard - Test Nicht Betrete
Otro Hazard - Do Non Entrano

Nameplate Power Warning

This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, consult your local power company.

Connect unit only to a properly measured supply. Use only three wire cord which is provided with the unit.

Abouchent unité qu'aux convenable mesura approvisionnement. Usage qu'à trois fil corde laquel est approvisionna avec la unité.

Anschliesse einheit nur bis ein angebracht gemessen nachschub. Gebrauch nur drei draht schnur welche ist verschaffen mit das einheit.

Connect unità solo a un proper misurata fornirle. Adoperano solo tre wire spago quale è fornii con gli unità.

Battery Replacement

This device may include a lithium battery powered circuit. If the battery is incorrectly replaced or mistreated, there is a danger of explosion and a risk of personal injury. Do not attempt to recharge the battery, disassemble it, immerse it in water, or dispose of it in a fire. Battery replacement may only be performed by authorized service personnel.

Rack Mount Installation

When installing this device in an instrument rack, the following factors must be accounted for:

1. **Enclosed Racks:** Enclosed racks must provide adequate ventilation. Make certain that the rack is not overly crowded and note that each unit in the rack generates its own heat. An enclosed rack should have louvered sides and a fan to circulate cooling air. The maximum temperature for the equipment in this environment is 45° C.

   When mounting the unit in an enclosed rack with a ventilation fan at the top of the rack, note that excessive heat generated by devices at the bottom of the rack can be drawn upward and into the ventilation slots of units located at the top. Make certain to provide adequate ventilation for equipment installed at the bottom of the rack.

2. **Open Racks:** Make certain that the rack frame does not block the ventilation slots on the instrument cover. If the device is installed on sliders, check the unit when seated all the way into the rack to make certain that ventilation slots are not blocked.

Ventilation

Slots in the instrument cover are provided to allow ventilation for heat dissipation. To ensure safe, reliable operation, these openings must not be covered or blocked.

Disconnect Power

If any of the following events are noted, immediately disconnect the unit from the outlet and contact qualified service personnel:

1. If the power cord becomes frayed or damaged.
2. If liquid has been spilled into the device or if the device has been exposed to rain or water.

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1. Introduction

WTI's APS-16 and APS-8 Asynchronous Port Switches allow reliable, high-speed connections between PCs, modems, and other devices using dissimilar baud rates, parity, and flow control. The APS supports communication at speeds up to 115.2 Kbps, and features full RTS/CTS hardware handshaking. Lightening-swift data throughput and full flow control make the APS the perfect data switch for today's high speed communications applications.

Versatile Connectivity
Up to 16 different devices can be connected to the APS without the need to select a common baud rate or parity. Each port can be individually configured for specific baud rates, parity, handshaking, and various other parameters and options.

Easy Set-Up and Operation
Configuration of the APS is simple. A menuing system is used to select communications parameters, and enable or disable options. The APS can easily adapt to the requirements of almost any data communications application.

Limited Command Access
The APS is ideal for situations that require limited access to important commands. Two security levels allow each port to function as a Supervisor Port or User Port, depending on the password entered at login. Supervisor Ports are allowed to change configuration, display status, and connect to any other port; User Ports are only allowed to connect to the ports provided by their password. Each individual port can be assigned its own unique, user-defined password, up to sixteen characters long.

Password Protected Connection and Command Access
The convenient password feature provides restricted access to command functions, and also restricts unauthorized connection to specific ports. Each individual port can be assigned its own unique, user-defined password, up to sixteen characters long.

Non-Volatile Memory
If power to the unit is lost or interrupted, the APS's non-volatile memory will retain user-defined parameters and port connections.

Modem Communication
The APS can be controlled by a local PC that communicates with the unit via cable, or controlled remotely via external modem. ProComm® (or another communications program) is used to send commands to connect ports or display status.

Configuration Backup
Once you have configured the APS to fit your application, parameters and options can be saved to an ASCII text file on your PC. This allows you to quickly restore user-selected parameters if the unit configuration is accidentally altered or deleted. Saved parameters can also be uploaded to other APS units. This allows rapid set-up when several units will be configured with identical or similar parameters.

APS-16 and APS-8 Units

This User's Guide discusses *both* the APS-16 and the APS-8. Throughout this User's Guide, both units are referred to as "the APS". The APS-16 includes sixteen RS232 ports, and the APS-8 includes eight RS232 ports. All other features function identically.

Typographic Conventions

^ (e.g. **^X**)	Indicates a control character. For example, the text "**^X**" (Control X) indicates the **[Ctrl]** key and the **[X]** key must be pressed simultaneously.
COURIER FONT	Indicates characters typed on the keyboard. For example, **/E** or **/P 02**.
[Bold Font]	Text set in bold face and enclosed in square brackets, indicates a specific key. For example, **[Enter]** or **[Esc]**.
< >	Indicates required keyboard entries. For Example: **/P <n>**.
[ ]	Indicates optional keyboard entries. For Example: **/W [n]**.

2. Unit Description

2.1. Front Panel

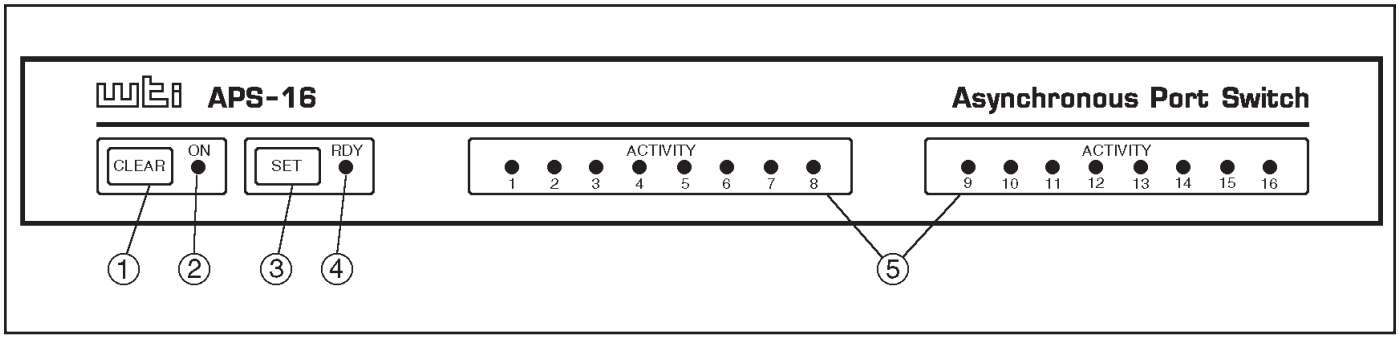

Figure 2.1: Instrument Front Panel (Model APS-16 Shown)

① **CLEAR:** Restarts the APS operating program without changing user-selected parameter settings or breaking port connections.

② **ON:** Lights when AC Power is applied.

③ **SET:** Used to Initialize the APS to defaults specified by the SetUp Switches. To initialize, press and hold both the SET and CLEAR buttons, release only the CLEAR button, and then release the SET button.

Note:

- During initialization, all port LEDs will flash ON for approximately one half second.
- During initialization, all command-selected parameters will be cleared, and the APS will revert to the default parameters specified by the SetUp Switches.

④ **RDY:** Flashes to indicate unit is operational.

⑤ **ACTIVITY Leds:** Light when corresponding port is receiving data.

2.2. Back Panel

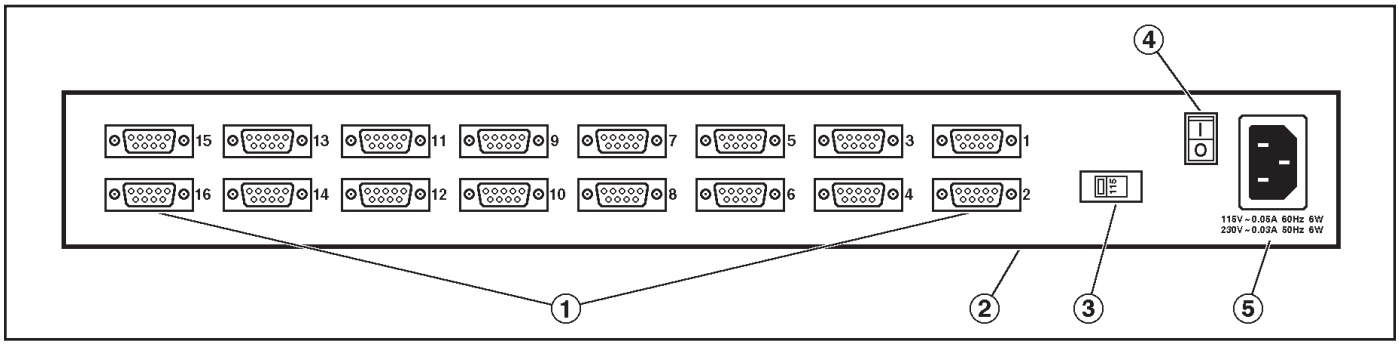

Figure 2.2: Instrument Back Panel (Model APS-16)

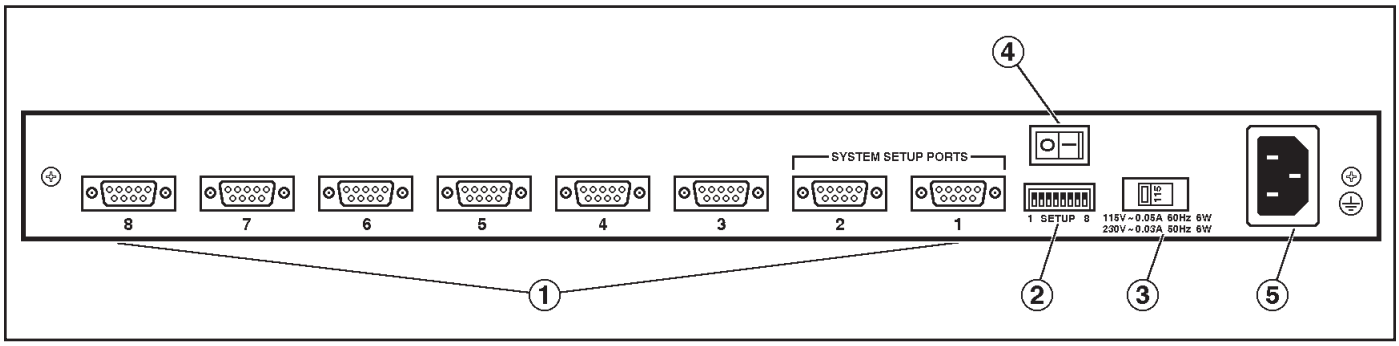

Figure 2.3: Instrument Back Panel (Model APS-8)

① **RS232 PORTS:** For connection to RS232 console ports on user devices. Standard DB9 connectors configured as DTE ports. The RS232 ports are similar to a standard serial port on a PC. When connecting a modem, use a standard serial cable. When connecting a PC or other DTE device use a null modem cable.

Ports 1 and 2 are System Setup Ports, which are used for communication during set-up and configuration. Note that Supervisor Level command access cannot be disabled at these ports.

② **SetUp Switches:** A bank of eight DIP switches, which set the default baud rate, handshake, message type, and duplex mode. Note that on APS-16 units, SetUp Switches are located on the underside of the unit; on APS-8 units, the SetUp Switches are located on the instrument back panel.

③ **115/230 Voltage Selector:** AC powered units only.

④ **Power Switch**

⑤ **Power Cable Receptacle** AC powered units only. DC units include a terminal block assembly as described in Section 4.1.

3. Getting Started

This section provides a brief overview of basic APS capabilities, and describes simple tests that can be used to determine if the unit is operating properly.

3.1. Communication Parameters

The SetUp Switches select default operating settings. Switch functions are summarized in Section 4.2, and on a label on the APS unit.

When the unit is shipped from the factory, the SetUp Switches are set for 9600 baud, 8 Bits-No Parity, RTS/CTS handshaking, verbose response, and command echo On (all switches ON).

For this overview only, use the default switch configuration. Set your communications program (e.g. ProComm®) to the parameters listed below. After completing this overview and installing the unit, please refer to Section 5 for instructions on selecting faster communication speeds and other parameters.

- 9600 Baud
- RTS/CTS Handshaking
- Full Duplex (Command Echo ON)
- 8 Bits, No Parity, 1 Stop Bit

Using Other Parameters for this Overview (Optional):
If desired, the APS can match the parameters used by your communications program. Refer to Section 4.2 and configure SetUp Switches accordingly. After changing the switches, reset the APS; press and hold both the SET and CLEAR buttons, release only CLEAR, wait for the Port LEDs to flash, and then release the SET button.

> **Note:** If SetUp Switches are changed, new settings will not take effect until the unit is initialized.

3.2. Apply Power to the APS

For AC units, the Voltage Selector Switch on the instrument back panel is used to set the unit for 115V or 230V AC power. When connecting power to a DC unit, please refer to the additional instructions in Section 4.1. Connect the APS to an appropriate power source. Press the Power Switch ON. The ON LED should light, and the RDY LED should begin to flash.

CAUTION: This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, please consult your local power company.

3.3. System SetUp Ports

In order to ensure access to command functions, Ports 1 and 2 are designated as System SetUp Ports; the Supervisor Mode cannot be disabled at these ports. Ports 1 and 2 will always allow password protected access to all APS command functions, even when the unit has been reset to the default state.

Therefore, Ports 1 and 2 are generally used for communication during initial set-up and configuration, or after the unit has been reinitialized (reset) to default parameters.

3.4. Connecting your PC to the APS

The APS can be controlled by a local PC directly connected to the APS, or controlled remotely via external modem. For this overview, a local PC running ProComm (or a similar communications program), will be cabled to Port 1.

> **Note: Communication via Modem (Optional):** This overview can also be performed via modem. Section 4.4 describes the procedure for connecting a modem to the APS.

Attach a standard null modem cable to your PC COM port. Make certain to connect to the COM port used by your communications program. Connect the other end of the cable to APS Port 1. For a description of the port interface, please refer to Appendix A.

3.5. Communicating with the APS Unit

Perform the following procedure to access the APS Command Mode, explore basic features, and check for proper operation.

1. Start your communications program (e.g. ProComm) and set it to 9600 bps, 8 bits, no parity, 1 stop bit.
2. Press **[Enter]** to access the APS Command Mode.
   a) In order for **[Enter]** to be recognized as a wake-up command, it must be pressed *without* any characters preceding it.
   b) If you have already hit other keys, press **[Enter]** twice.
   c) (Optional) If you are performing this overview via modem, refer to Section 5.1 for additional instructions.
3. The Port Status Screen will be displayed, followed by the "APS>" prompt, indicating that you have successfully accessed Command Mode. If the prompt is *not* displayed, check the following:
   a) **Cable Connection:** Check the connection between the APS and the PC. Make certain the cable connectors are firmly seated.
   b) **Communication Parameters:** Make certain the APS and ProComm are using the same baud rate.

```
COMMAND MENU

DISPLAY                                          CONFIGURATION
/S[P]       Port Status                          /F     System Parameters
/SD         Port Diagnostics                     /P [n] Port Parameters
/W[P] [n]   Port Parameters (Who)                /I     Default & Test
/J          Site ID                              /CP    Copy Port Parameters
/H          Command Menu (Help)

CONTROL                                         +-----------------------+
<Enter>          Enter Command Mode             | P   Show Passwords    |
/X               Exit Command Mode              | n   Port # or Name    |
/C <n> [n]       Connect Local [Remote]         | *   "all"             |
/D <n| ... |*>  Disconnect                      | |   "or"              |
/E <n| ... |*>  Erase Buffer                    | <>  Required Entry    |
/U               Send Parameter File            | []  Optional Entry    |
                                                +-----------------------+


/D, /E, /I Commands:  Add /Y to bypass "Sure (Y/N)?"
```

Figure 3.1: The Supervisor Level Help Screen

4. **Help Screen:** Type **/H [Enter]** to display the Supervisor Level Help Screen (Figure 3.1).
5. **Port Status Screen:** Type **/S [Enter]** to display the Port Status Screen (Figure 3.2), which summarizes conditions at all Ports. The various fields of the Port Status Screen are explained in Section 6.1.
6. **Port Connection:** The APS can perform two different types of port connections; Resident Connections and Third Party Connections.
   a) **Resident Connection:** Your resident port (e.g. Port 1) issues a /C command to connect to a second port.
      i. To connect Port 1 to Port 2, type **/C 2 [Enter]**. While Port 1 is connected, the APS will *not* recognize commands issued at Port 1. However, the unit *will* recognize a Resident Disconnect Sequence issued at Port 1 or Port 2.
      ii. Issue the Resident Disconnect Sequence (Logoff Sequence); type **[Enter]+++[Enter]**.
   b) **Third Party Connection:** Your resident port (e.g. Port 1) issues a /C command to create a connection between two other ports.
      i. To connect Port 2 to Port 3, type **/C 2 3 [Enter]**.
      ii. While Ports 2 and 3 are connected, Port 1 will still recognize APS commands. Type **/S [Enter]** to display the Port Status Screen. The "STATUS" column should now list Ports 2 and 3 as connected, and Port 1 as "Free".
      iii. Issue a Third Party Disconnect command to disconnect Ports 2 and 3; type **/D 2 [Enter]**. The unit will display the "Are you Sure (y/n)?" prompt. Type **y** and press **[Enter]** to disconnect.
      iv. Type **/S [Enter]** to display the Port Status Screen. The "STATUS" column should now list Ports 2 and 3 as "Free".

```
PORT STATUS:   Version 2.0,   Site ID: (undefined)

PORT |       NAME        |     PASSWORD      | STATUS | MODE | BUFFER COUNT
-----+-------------------+-------------------+--------+------+--------------
 01  | (undefined)       | (undefined)       |  Free  | Any  |            0
 02  | (undefined)       | (undefined)       |  Free  | Any  |            0
 03  | (undefined)       | (undefined)       |  Free  | Any  |            0
 04  | (undefined)       | (undefined)       |  Free  | Any  |            0
 05  | (undefined)       | (undefined)       |  Free  | Any  |            0
 06  | (undefined)       | (undefined)       |  Free  | Any  |            0
 07  | (undefined)       | (undefined)       |  Free  | Any  |            0
 08  | (undefined)       | (undefined)       |  Free  | Any  |            0
     |                   |                   |        |      |
 09  | (undefined)       | (undefined)       |  Free  | Any  |            0
 10  | (undefined)       | (undefined)       |  Free  | Any  |            0
 11  | (undefined)       | (undefined)       |  Free  | Any  |            0
 12  | (undefined)       | (undefined)       |  Free  | Any  |            0
 13  | (undefined)       | (undefined)       |  Free  | Any  |            0
 14  | (undefined)       | (undefined)       |  Free  | Any  |            0
 15  | (undefined)       | (undefined)       |  Free  | Any  |            0
 16  | (undefined)       | (undefined)       |  Free  | Any  |            0

Enter /H for Command Menu
```

Figure 3.2: The Port Status Screen (Defaults Shown)

7. **Site I.D. Message:** If desired, the Site I.D. Message can be used to indicate the name or location of the unit. Note that the Site I.D. cannot include double quotes (").

   a) Type **/F** and press **[Enter]**. When the System Parameters menu appears, type **1** and press **[Enter]**. A prompt will appear. Key in the desired text (up to 32 characters) and press **[Enter]**.

   b) To display the Site I.D., type **/J [Enter]**.

   c) Note that the Site I.D. will be cleared when the unit is initialized.

This completes the introductory overview of the APS. Please proceed to Sections 4 and 5 for complete installation and configuration procedures.

4. Hardware Installation

4.1. Connecting Power to the APS Unit

The APS is available in both AC and DC powered versions. When connecting AC or DC power to the APS, proceed as follows:

CAUTION: This device should only be operated with the type of power source indicated on the instrument nameplate. If you are not sure of the type of power service available, please contact your local power company.

4.1.1. AC Powered Units

The Voltage Selector Switch on the instrument back panel is used to set the unit for 115V or 230V AC power. Plug the supplied power cable into the receptacle on the APS back panel and then connect the power cable to a grounded AC outlet.

4.1.2. DC Powered Units

When connecting the APS to your DC power source, first remove the protective plastic cover from the DC terminal block, attach the wires from the 48V DC power source to the screw terminals, connect your ground line to the labeled ground screw, and then replace the protective cover.

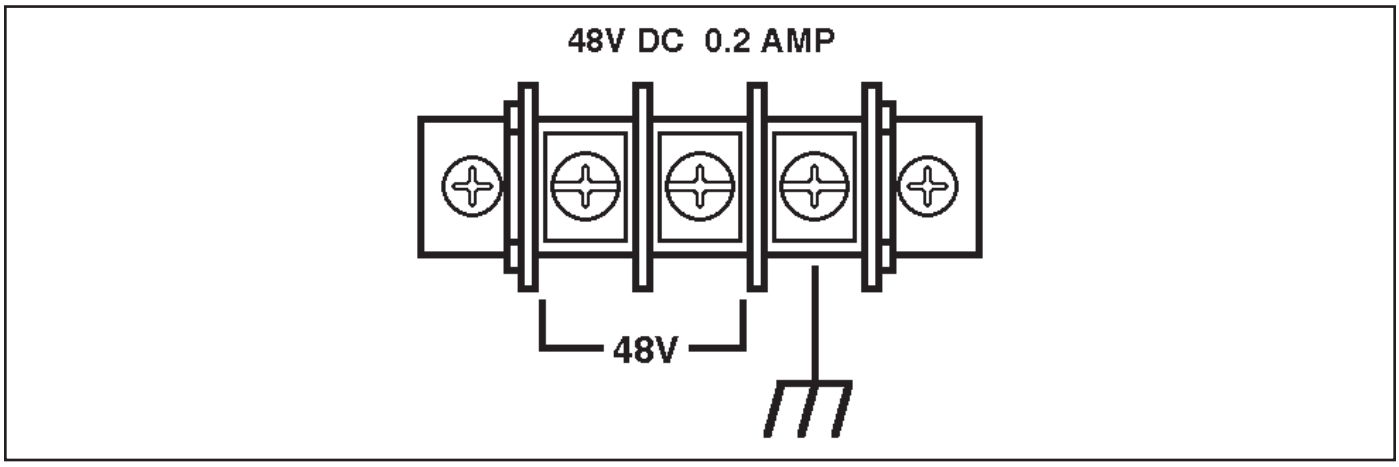

Figure 4.1: Terminal Block Assembly (DC Units Only)

4.2. Configure SetUp Switches

The SetUp Switches are used to select default settings for the APS RS232 ports. On the APS-16, the SetUp Switches are located on the underside of the unit. On the APS-8, the SetUp Switches are located on the instrument back panel.

When the APS is shipped from the factory, the SetUp Switches are configured for 9600 baud, 8 Bits-No Parity, RTS/CTS handshaking, verbose command response, and command echo on (all switches ON). These settings are compatible with most applications. If the default settings are *not* compatible with your application, change the switch settings as follows.

Notes:

- The SetUp Switches should be configured to match the parameters your control device will use when communicating with the APS. This will ensure access to command functions, even if the unit is initialized to default parameters.
- If the SetUp Switch configuration is changed, new parameters will not take effect until the unit is initialized as described in Section 4.3.
- Operating parameters (baud rate, parity, etc.) can be selected for each port using the /P command as described in Section 5.5. The /P command can select different parameters for each APS port.
- When the APS is initialized, parameters will return to settings specified by the SetUp Switches.

On/Off Positions: On the APS-8 (Switches on Back Panel), the switches are ON when placed in the DOWN position. On the APS-16 (Switches on underside of unit) On/Off positions are indicated on a label adjacent to the SetUp Switches.

4.2.1. Default Baud Rate (Sw1, Sw2, Sw3)

SetUp Switches one through three select the *default* baud rate for all APS RS232 Ports. The default baud rate must match the rate your control device will use when communicating with the APS. If the control device will communicate via modem, select a default baud rate that is compatible with the modem. Note that the /P command can also be used to select a different *operating* baud rate for each port.

SW			
1	2	3	Default Baud Rate
ON	ON	ON	9600*
OFF	ON	ON	300
ON	OFF	ON	1200
OFF	OFF	ON	2400
ON	ON	OFF	19.2K
OFF	ON	OFF	38.4K
ON	OFF	OFF	57.6K
OFF	OFF	OFF	115.2K

* = Factory Setting

4.2.2. Default Handshake (Sw4, Sw5)

The default handshake format must match the format your control device will use when communicating with the APS. SetUp Switches 4 and 5 can select RTS/CTS (hardware), XON/XOFF, Both or None. Note that the /P command can also be used to select a different handshake format for each port.

Switch		Default Handshake
4	5	
ON	ON	RTS/CTS *
OFF	ON	XON/XOFF
ON	OFF	Both
OFF	OFF	None

* = Factory Setting

4.2.3. Default Response Message Format (Sw6)

When commands are invoked, the APS can respond with either verbose or terse (abbreviated) messages. Response messages are summarized in Section 9.2. After installation, the /P command can also set the response format to "none" (Quiet Mode). When Quiet Mode is selected, the unit will not send response messages. Note that the /P command can also be used to select a different Response Message format for each port.

Switch 6	Default Response Message Type
ON	Verbose (English Text) *
OFF	Terse (abbreviated / numeric)

* = Factory Setting

4.2.4. Default Command Echo (Sw7)

Switch Seven enables or disables the Command Echo. When enabled, characters sent to the APS will be echoed back to the control device. Note that the /P command can also be used to enable or disable the Command Echo at each individual port.

Switch 7	Default Command Echo
ON	Enable*
OFF	Disable

* = Factory Setting

Note: SetUp Switch 8 is not currently used.

4.3. Initialize Unit to Default Settings

If SetUp Switch settings are changed, new parameters will not take effect until the APS is initialized.

> **CAUTION: After initialization, the APS will revert to the parameters specified by the SetUp Switches. Any command-selected parameters will be lost.**

1. Simultaneously press the SET and CLEAR buttons, located on the face of the APS.

2. Release the CLEAR button, wait for the Port LEDs to flash, and then release the SET button.

4.4. Connecting Devices to the APS

1. Access the APS Command Mode.

2. Determine which APS port will be used for connection to the new device (e.g. Port 3).

3. **Check Buffer:** Type **`/S`** **[Enter]** to display the Port Status Screen. Check the "Buffer Count" column, which lists the amount of data stored in the buffer for each port.

   a) If the Port Status Screen shows data stored in the buffer for the desired port, type **`/E xx`** **[Enter]** to clear the buffer (where **`xx`** is the desired port number).

   b) Note that cleared data cannot be recovered.

4. Use an appropriate DB9 cable to connect the RS232 serial port on the device to the selected DB9 port on the APS.

   a) **External Modems and other DCE Devices:** Use a standard serial modem cable.

   b) **PCs and other DTE Devices:** Use a standard null modem cable.

5. Select communication parameters for the port as described in Section 5.

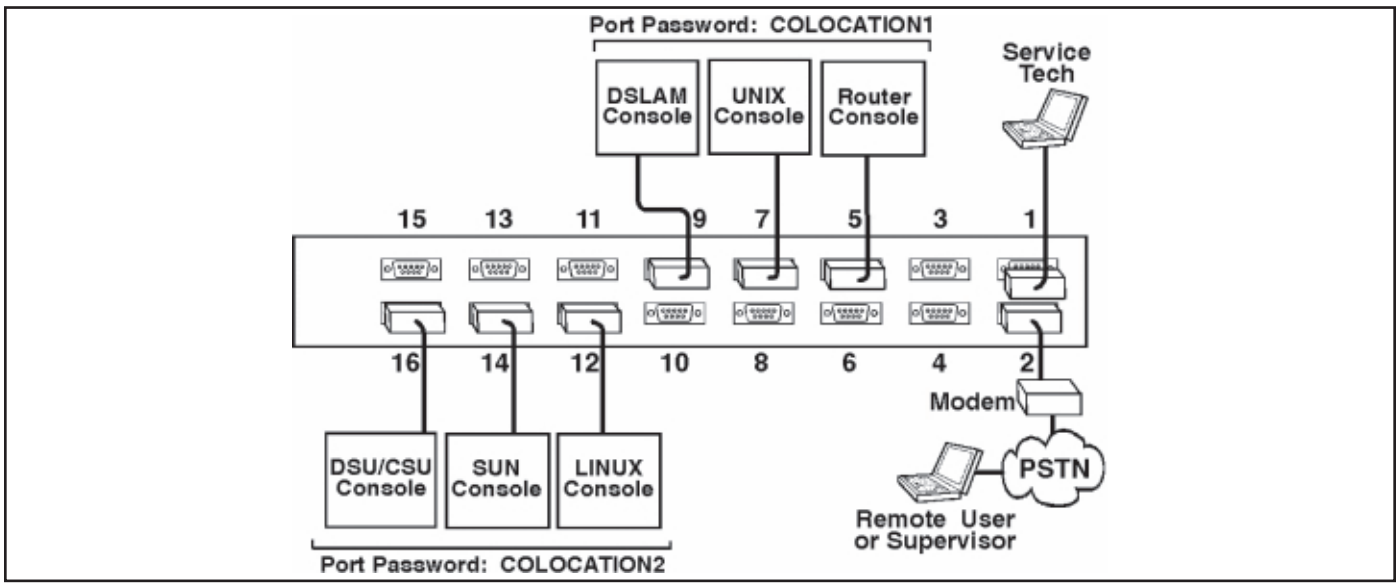

Figure 4.2: APS Application Example (Not to Scale)

4.5. Application Example

The example in Figure 4.2 shows one of many possible installation configurations for the APS. In this example, ports have been configured as follows:

- **Port 1 (System SetUp Port):** This port has been left open in order to permit on-site service personnel to access the Command Mode without disrupting other ports. Since Port 1 is a System SetUp Port, the service tech is allowed password protected access to Supervisor Level commands, and is able to connect to any port, change configuration, or display unit status.
- **Port 2 (Modem Port):** An external modem has been installed at Port 2. This port has also been configured for Modem Mode, which allows definition of a modem reset string, initialization string, and hang-up string. When a caller contacts the APS unit via modem, a password prompt will be displayed. If the Supervisor Password is entered, the APS will permit access to Supervisor Level Commands; if a Port password is entered, the APS will only recognize User Level Commands. Supervisors are allowed to adjust port configuration, connect to any port, or review unit status. Users are only allowed to review status and connect to the ports allowed by their Port Password.
- **Ports 5, 7, and 9 (User Ports):** The Port Password "COLOCATION1" has been assigned to these three ports. If the APS is contacted via the Modem Port, and this password is entered at log in, User's will only be able to review status of permitted ports and connect to the devices attached to Ports 5, 7, and 9.
- **Ports 12, 14, and 16 (User Ports):** The Port Password "COLOCATION2" has been assigned to these three ports. If the APS is contacted via the Modem Port, and this password is entered at log in, User's will only be able to review status of permitted ports and connect to the devices attached to Ports 12, 14, and 16.

Note that in this example, Ports 3 through 16 could also be a mixture of ports connected to external modems, and ports connected to devices such as file servers or archives. This would allow remote users to dial in and access a specific file server or archive after entering a valid Port Password at log in.

5. Configuration

5.1. Access to the APS Command Mode

When the APS Command Mode is active, commands can be invoked to select parameters, and connect or disconnect ports.

> **Note:** Command Mode *cannot* be accessed from a Buffer Mode Port, Passive Mode Port, or any port that is currently connected to another APS port.

1. Start your communications program (e.g. ProComm®). Make certain the APS and ProComm are set for the same parameters (e.g. baud rate, parity, etc.).
2. Access the Command Mode.
   a) **Local Access:** To access the command mode from a local PC that is connected to the APS via cable, press **[Enter]**.
      i. There must be no other characters preceding **[Enter]**. If you have already hit other keys, press **[Enter]** twice.
      ii. If the Supervisor Password has been defined, the password prompt will be displayed. Key in your Supervisor or Port password and press **[Enter]**. The "APS>" prompt will appear.
   b) **Modem Access:** To access the command mode via modem, proceed as follows:
      i. Dial the number for the external modem connected to the APS.
      ii. If you have defined the Supervisor Password, a prompt will be displayed. Key in your Supervisor or Port password and press **[Enter]**. If the Supervisor Password has *not* been defined, just press **[Enter]**. The "APS>" prompt will appear.

5.2. System SetUp Ports

As discussed previously in Section 3 of this User's Guide, Ports 1 and 2 are designated as System SetUp Ports. Ports 1 and 2 will always permit password protected access to Supervisor Level command functions, even when the unit is initialized to default parameters.

In order to ensure that access to command functions is always available, Ports 1 and 2 *cannot* be configured as Buffer Mode or Passive Mode Ports. Buffer and Passive Mode Ports are not able to access the Command Mode. In addition, Ports 1 and 2 always permit password protected access to Supervisor Level commands; the Supervisor Mode *cannot* be disabled at these two ports.

5.3. Password Functions

The APS features two different types of passwords; the Supervisor Password and the Port (User) Passwords. The Supervisor Password allows system administrators to invoke unit configuration commands, and the Port Passwords allow users to access specific ports in order to create connections between permitted ports or view port configuration parameters.

5.3.1. The Supervisor Password

The Supervisor Password allows access to higher level APS configuration commands, which administrators can employ to select communication parameters, assign port access rights, and perform other system management tasks.

When the Supervisor Password is defined (via the System Parameters menu), the APS will display a password prompt whenever you attempt to access the command mode. If the correct Supervisor Password is entered, the APS command mode then starts up in Supervisor Mode. Supervisor Level commands are summarized in Section 9.3 of this User's Guide.

Note:

- If the Supervisor Password is *not* defined, then Supervisor Level commands will be available to all ports, and port access and configuration functions will not be password protected.
- If you wish to restrict user ports from changing APS configuration parameters or connecting to restricted ports, the Supervisor Password must be defined.
- When the Supervisor Password is defined, the APS will display a password prompt when you attempt to access the command mode. Any RS232 port that has *not* been assigned a Port Password, can then only be accessed using the Supervisor Password.

Normally, the Supervisor Password can be entered at any port in order to gain access to Supervisor Level commands. Note that if you wish to completely deny a port's access to Supervisor Mode (even *with* the Supervisor Password), the Port Parameters menus (/P) can be used to disable the Supervisor Mode at ports 3 through 16. The Supervisor Mode *cannot* be disabled at System SetUp Ports 1 and 2.

Note that if the unit is reset to default parameters, all ports will revert to the default state, where Supervisor Level commands are available to all ports, without password protection.

Note:

- When defining a Supervisor Password, it is strongly recommended that you record the password for future use.
- If you forget or lose your Supervisor Password, you will not be able to access Supervisor Level Commands. In this case, the only way to access the Supervisor Mode, is to reinitialize the APS to default values as described in Section 4.2.

5.3.2. The Port Passwords

The Port Passwords (or User Passwords) allow system administrators to restrict access to a specific group of ports. When the APS command mode is accessed with a Port Password, users may only connect to the RS232 Ports to which they have been granted access, and review configuration parameters for those ports. Port Passwords do *not* grant access to APS configuration commands.

The configuration menus (/P) for each RS232 port allow a Port Password to be assigned to each individual port. In order to allow a Port Password to grant access to a *group* of APS ports, the same Port Password is assigned to each port in the group.

For example, if the Port Password "test" is assigned to ports 3, 4, and 5, then when "test" is entered at the Password Prompt, the user will only be able to connect to ports 3, 4, and 7, and will only be able to view parameters for ports 3, 4, and 7.

If desired, all APS ports can function as both a Supervisor Port and a User Port, depending on which password is entered at the login prompt. However, if you wish to prevent a port from being able to access the Supervisor Mode at all (even *with* the Supervisor Password), the Supervisor Mode can be disabled at the RS232 Ports using the Port Configuration menus as described in Section 5.5. Note however, that the Supervisor Mode *cannot* be disabled at Ports 1 and 2; these ports are designated as SetUp Ports, and are always allowed password protected access to Supervisor Level commands.

5.4. Defining the Site ID and Supervisor Password

Before configuring individual ports, the Site ID and Supervisor Password should be defined. The Site ID can be used to indicate the location or name of the APS unit, and the Supervisor Password is used to restrict access to sensitive command functions. Both the Site ID message and Supervisor Password are defined via the System Parameters menu (/F).

Note:

- The Site ID cannot include double quotes.
- The Supervisor Password cannot include an asterisk, forward slash, spaces, or double quotes.
- Both the Site ID and Supervisor Password will be cleared if the APS is initialized to default settings.
- The System Parameters Menu is only available in Supervisor Mode.

1. Access the Command Mode. When the "APS>" prompt appears, type **`/F`** **[Enter]** to display the System Parameters Menu.
2. **Site ID Message:** (Up to 32 characters; Default = undefined) Type **`1`** and press **[Enter]**, the Site I.D. Prompt will appear. Key in the desired text and press **[Enter]** . To display the Site I.D., type **`/J`** **[Enter]**. The Site ID is also listed on the Port Status and Port Diagnostic Screens.
3. **Supervisor Password:** (Up to 16 characters; Default = undefined) Type **`2`** and press **[Enter]**, a prompt will appear. Key in the desired password then press **[Enter]**, the APS will prompt you to re-key the password in order to confirm spelling and capitalization. Key in the password a second time, and then press **[Enter]**.

Note:

- The Supervisor Password is case sensitive. Make certain to note the exact password entered, including the case of each letter.
- Make certain to write down your Supervisor Password. If the password is lost or forgotten, you will not be able to access Supervisor Level commands unless you initialize the unit and clear all parameters as described in Section 4.3.

5.5. Port Configuration

5.5.1. Configuration Conventions

When responding to prompts, invoking commands, and selecting items from the port configuration menus, note the following:

- To select an item from a Port Configuration menu, key in the number for the item and press **[Enter]**.
- To clear an item in a Port Configuration menu, enter the number for the desired item and press **[Enter]**. When the prompt appears, press **[Space]** and then press **[Enter]**.
- When defining the Port Name, do not use the forward slash character (**/**), double quotes (**"**), the asterisk character (*****), or blank spaces.
- Port Names *cannot* begin with a number.
- Refer to the instructions in each screen for additional functions available under that screen.
- To exit a menu or prompt without changing its current value, press **[Esc]**.
- Passwords and port names are case sensitive. When defining passwords and port names, note the exact text, including the case of each character.

5.5.2. Port Modes

The APS offers four different port operation modes; Any-to-Any Mode, Passive Mode, Buffer Mode, and Modem Mode. The Port Modes function as follows:

- **Any-to-Any Mode:** Allows communication between connected ports. Any-to-Any Mode Ports can be connected to other Any-to-Any Mode, Passive Mode, Buffer Mode, or Modem Mode Ports by accessing Command Mode and invoking the /C command (see Section 7.1.1). The Any-to-Any Mode is available to all ports.
- **Passive Mode:** Allows communication between connected ports, but does *not* allow access to Command Mode. Passive Mode Ports can be connected by accessing Command Mode from a free Any-to-Any or Modem Mode port and invoking the /C command (see Section 7.1.1). The Passive Mode is not available to Ports 1 or 2.
- **Buffer Mode:** Allows collection and storage of data received from connected devices. Collected data can be retrieved by accessing Command Mode from a free Any-to-Any or Modem Mode Port, and issuing the Connect (/C) Command. Note that the Buffer Mode also allows pass-through communication with the connected device. The Buffer Mode is not available to Ports 1 or 2.
- **Modem Mode:** Allows communication between connected ports and simplifies connection to an external modem. A port configured for the Modem Mode can perform all functions normally available in Any-to-Any Mode. The Modem Mode also allows definition of a Hang-Up String, Reset String, and Initialization String. Any APS RS232 port can be configured for the Modem Mode.

For more information on Port Modes, please refer to Section 7.

```
PORT PARAMETERS #02

 1.  Port Name:              (undefined)
 2.  Password:               (undefined)
 3.  Baud Rate:              9600
 4.  Bits/Parity:            8-None
 5.  Stop Bits:              1
 6.  Handshake Mode:         CTS/RTS
 7.  Port Mode:              Any-to-Any
     74.  DTR Output:        Pulse
 8.  Supervisor Mode:        Permit
 9.  Logoff Character:       +
10.  Sequence Disconnect:    Three Characters
11.  Timeout Disconnect:     Off
12.  Response Type:          Verbose
13.  Command Echo:           On
14.  Accept Break:           Yes

Enter:  "<" Previous Port,
        ">" Next Port,
        <ESC> Exit ...
```

Figure 5.1: Port Configuration Menu (Port 2 Shown)

5.5.3. RS232 Port Configuration Menus

The Port Configuration Menus are used to select options for each of the APS RS232 ports. Parameters selected via these menus will stay in effect until the unit is initialized or the /P command is used to reconfigure the port. After initialization, parameters will revert to the defaults specified by the SetUp Switches.

To select port parameters, proceed as follows:

1. Access the Command Mode. If the password prompt is displayed, key in your Supervisor Level Password.
2. Type **/P**, followed by the number of the port to be configured, and press **[Enter]**. For example, to configure Port 2, type **/P 2 [Enter]**. The Port Configuration menu will appear (Figure 5.1).
   a) If the /P Command is entered without the port number (e.g. **/P [Enter]**), the configuration menu for your resident port will be displayed.
   b) The /P command is only available in the Supervisor Mode

The Port Configuration menu offers the following options:

- **1. Port Name:** (Up to 16 characters) Assigns a name to the port. (Default = undefined).

- **2. Password:** (Up to 16 characters) Defines the Port Password for this port. Note that identical Port Passwords are generally assigned to several ports. When this password is entered at the login prompt, the user will then have access to all ports that share this password. (Default = undefined).

Note: The Port Password is *not* displayed by the Port Parameters menu. When the Port Password has been defined, the field for this item will read "defined". To display Port Passwords, invoke the /SP or /WP commands as described in Section 6.

- **3. Baud Rate:** Selects the baud rate for the port. Can be set to standard rates from 300 bps to 115.2K bps. (Default = Selected By SetUp Switches 1, 2, and 3))

- **4. Bits/Parity:** (Default = 8-None).

- **5. Stop Bits:** (Default = 1).

- **6. Handshake Mode:** Selects the handshake format for this port; XON/XOFF, RTS/CTS (hardware), Both, or None. (Default = RTS/CTS).

- **7. Port Mode:** Defines the operation mode for this port. Note that Ports 1 and 2 *cannot* be configured for Passive Mode or Buffer Mode. (Default = Any-to-Any Mode).

  When Any-to-Any, Passive, or Buffer Mode is selected, the unit will display the DTR Output prompt as shown in Figure 5.1. The DTR Output prompt is not displayed when Modem Mode is selected.

  - **74. DTR Output:** Determines how the DTR line will react when this port disconnects. The DTR line can be held low, held high, or pulsed for 0.5 seconds and then held high. In the default state, the DTR line will pulse for 0.5 seconds and then remain high. For more information on DCD and DTR hardware lines, please refer to Appendix A. (Default = Pulse).

```
PORT PARAMETERS #02

 1.  Port Name:              (undefined)
 2.  Password:               (undefined)
 3.  Baud Rate:              9600
 4.  Bits/Parity:            8-None
 5.  Stop Bits:              1
 6.  Handshake Mode:         CTS/RTS
 7.  Port Mode:              Modem
     71.  Reset String:      ATZ
     72.  Init String:       AT&C1&D2S0=1
     73.  Hang-Up String:    (undefined)
 8.  Supervisor Mode:        Permit
 9.  Logoff Character:       +
10.  Sequence Disconnect:    Three Characters
11.  Timeout Disconnect:     Off
12.  Response Type:          Verbose
13.  Command Echo:           On
14.  Accept Break:           Yes

Enter:  "<" Previous Port,
        ">" Next Port,
        <ESC> Exit ...
```

Figure 5.2: Port Parameters Menu (Modem Mode)

When Port Mode (menu Item 7) is set to Modem Mode, the menu will include additional prompts (see Figure 5.2), which are used to define the following:

- **71. Reset String:** If necessary, this prompt can be used to re-define the modem reset string. The Reset String is sent prior to the Initialization string in order to select common initial parameters. (Up to 48 characters, Default = **ATZ**).

- **72. Initialization String:** Defines a command string that is sent after the Reset String to initialize a modem to settings required by your application. (Up to 48 characters, Default = **AT&C1$D2S0=1**).

- **73. Hang-Up String:** Defines the hang-up message. Although the APS will pulse the DTR line to hang-up an attached modem, the Hang-Up string is often useful for controlling modems that do not use the DTR line. (Up to 48 characters, Default = undefined).

- **8. Supervisor Mode:** Permits or denies port access to Supervisor Mode. When this item is enabled (Permit), and the valid Supervisor Password is entered, the port will allow access to Supervisor Level commands. When disabled (Deny), the port may *not* enter Supervisor Mode, even when the Supervisor Password is entered. (Default = Permit).

- **9. Logoff Character:** Defines the Logoff Character for this port. The Logoff Character determines the command sequence that must be issued at this port in order to disconnect from a second port (Resident Disconnect). Note the following:

  - The default Logoff Character is "**+**". As a result, the default Resident Disconnect Sequence is **[Enter]+++[Enter]**.

  - The default three character Resident Disconnect Sequence uses the format "**[Enter]LLL[Enter]**", where **L** is the Logoff Character. If the one character disconnect is selected (see item 10), a resident connection is terminated by simply typing the Logoff Character once (without carriage returns).

  - The Logoff Character can also be a control character such as **^X**.

- **10. Sequence Disconnect:** Enables/Disables and configures the Resident Disconnect command. This prompt offers the option to either disable the Sequence Disconnect, select a three character format, or select a one character format. (Default = Three Characters). Note the following:

  - When a Resident Connection is initiated, the APS will send a message which lists the connected ports, and displays the one character or three character disconnect command that will be required in order to terminate the connection.

  - The One Character Disconnect sequence is intended for situations where the destination port should ***not*** receive the disconnect command. When the Three Character format is selected, the disconnect sequence ***will*** pass through to the destination port prior to breaking the connection.

  - When the Three Character format is selected, the Resident Disconnect Sequence will use the format "**[Enter]LLL[Enter]**", where **L** is the selected Logoff Character.

  - When the One Character format is selected, resident connections are terminated by entering the selected Logoff Character only (e.g. **^X**). There is no need to press **[Enter]** before and after the Logoff Character when the One Character format is selected.

- **11. Timeout Disconnect:** Enables and selects the Timeout Period for this port. If enabled, and the port does not receive or transmit data for the specified Timeout Period, the port will disconnect. When the port is set for Any-to-Any Mode, Passive Mode, or Buffer Mode, the default setting for this item is “OFF”. When the port is set for Modem Mode, the default setting for this item is 15 minutes.

- **12. Response Type:** Selects the type of messages that this port will send in response to commands. The user can select Verbose (English Text), Terse (Numeric / Abbreviation), or Quiet Mode (No Response). (Default = Verbose).

- **13. Command Echo:** Enables or Disables the command echo for this port. (Default = On).

- **14. Accept Break:** Determines whether the port will accept breaks received from the attached device, and pass them along to a connected port. When enabled, breaks received at this port will be passed to any port that this port is connected to, and sent along to the device connected to the other port. When disabled, breaks will be refused at this port, and hence, not sent to the other port. (Default = Yes)

```
COPY PORT PARAMETERS:

 1. Port Name:
 2. Password:                (undefined)
 3. Baud Rate:
 4. Bits/Parity:
 5. Stop Bits:
 6. Handshake Mode:
 7. Port Mode:
    74. DTR Output:
 8. Supervisor Mode:
 9. Logoff Character:
10. Sequence Disconnect:
11. Timeout Disconnect:
12. Response Type:
13. Command Echo:
14. Accept Break:

(Note: Ports 1 & 2 will NOT have restricted values changed.)
Enter: Parameter # <CR> to define parameter value to copy to all ports,
       -<CR> to remove all values set,
       X<CR> to exit WITHOUT copy,
       <ESC> to copy to all ports and exit ...
```

Figure 5.3: The Copy Port Parameters Menu

5.6. Copying Parameters to All Ports

The /CP command (Copy Port Parameters) provides a convenient means for selecting identical (or similar) parameters for all APS RS-232 ports.

When the /CP command is invoked, the unit will display a menu which allows you to select port communication parameters, and then copy them to all APS RS-232 ports. The Copy Port Parameters menu can be used to set *all* parameters for *all* RS-232 Ports, or define only a select group of parameters and then copy them to all ports.

Note:

- The /CP command is only available in Supervisor Mode.
- The Copy Port Parameters Menu will not display the Port Password. This field will read either “undefined” or “defined”, depending upon whether or not the Port Password has been specified.

To select common parameters for all APS RS-232 ports, proceed as follows:

1. Access the APS command mode. If the password prompt is displayed, key in your Supervisor Level Password.
2. At the command prompt, type **/CP** and press **[Enter]**, the menu shown in Figure 5.5 will be displayed.
3. **Selecting Parameters:** To select parameters to be copied, key in the number for the desired parameter, press **[Enter]**, and then follow the instructions in the submenu. Note that it is not necessary to define *all* port parameters, for example, the /CP command could be used to select only the Baud Rate for all ports.

   Note: The /CP command will only copy the parameters that are currently displayed by the Copy Port Parameters menu. Note that although the Port Password is not displayed, the selected password will be copied if the field for this item reads "defined".
4. **Clear Menu:** After defining several parameters, if you wish to clear the /CP menu and start again, type **-** (dash) and press **[Enter]**, the menu will be reset.
5. **Copy Parameters:** When you have finished selecting parameters, press **[Esc]** to copy the selected parameters to all APS RS-232 Ports and exit from the Copy Port Parameters menu. Note that the APS will display a "Sure" prompt before copying parameters to other ports.

5.7. Save User Selected Parameters

Although this step is optional, it is strongly recommended to save all user-defined parameters to an ASCII file. This will allow quick recovery in the event of accidental deletion or reconfiguration of port parameters. Section 8 describes the procedure for saving configuration parameters to an ASCII file.

6. The Status Screens

The APS Status Screens display the connection status and communication parameters for the APS RS-232 ports. There are three different types of status screens; The Port Status Screen (/S), the Port Diagnostics Screen (/SD), and the Port Parameters Screens (/W).

6.1. The Port Status Screen (/S)

The Port Status Screen lists the general status of the APS's RS-232 ports. To display the Port Status Screen, access the command mode and type **/S [Enter]**, the screen will appear as shown in Figure 6.1.

Although both Supervisors and Users can display the Port Status Screen, the screen will appear slightly different, depending upon whether the command mode was accessed with the Supervisor Password or a Port Password. When a Port Password (User Mode) is entered at login, the Port Status Screen will only display the status of those ports that share the same Port Password that was entered at login.

When the Supervisor Mode is active, the Port Status Screen offers the option to either display or suppress Port Passwords. Normally, when the /S command is invoked, the Password column will read either "defined" or "undefined", depending upon whether or not the password for each port has been specified. To display the Port Status Screen *with* Port Passwords included, type **/SP** and then press **[Enter]**. Note that the /SP command option is not available in User Mode.

```
PORT STATUS:   Version 2.00   Site ID: (undefined)

PORT |        NAME        |      PASSWORD      | STATUS | MODE | BUFFER COUNT
-----+--------------------+--------------------+--------+------+--------------
 01  | (undefined)        | (undefined)        |  Free  | Any  |             0
 02  | (undefined)        | (undefined)        |  Free  | Any  |             0
 03  | (undefined)        | (undefined)        |  Free  | Any  |             0
 04  | (undefined)        | (undefined)        |  Free  | Any  |             0
 05  | (undefined)        | (undefined)        |  Free  | Any  |             0
 06  | (undefined)        | (undefined)        |  Free  | Any  |             0
 07  | (undefined)        | (undefined)        |  Free  | Any  |             0
 08  | (undefined)        | (undefined)        |  Free  | Any  |             0
     |                    |                    |        |      |
 09  | (undefined)        | (undefined)        |  Free  | Any  |             0
 10  | (undefined)        | (undefined)        |  Free  | Any  |             0
 11  | (undefined)        | (undefined)        |  Free  | Any  |             0
 12  | (undefined)        | (undefined)        |  Free  | Any  |             0
 13  | (undefined)        | (undefined)        |  Free  | Any  |             0
 14  | (undefined)        | (undefined)        |  Free  | Any  |             0
 15  | (undefined)        | (undefined)        |  Free  | Any  |             0
 16  | (undefined)        | (undefined)        |  Free  | Any  |             0

Enter /H for Command Menu
```

Figure 6.1: The Port Status Screen (Supervisor Mode, APS-16 Shown)

As shown in Figure 6.1, The Port Status Screen lists the following items:

- **Name:** The user-defined name for each port.
- **Password:** The user-defined password for each port. Note that actual passwords are not displayed; this column will read either “undefined” or “defined”. To display Port Passwords, type **/SP [Enter]** (Supervisor Mode Only).
- **Status:** The connect status of each port. When the port is connected, this column will list the number of the other APS port connected to this port.
- **Mode:** The user-selected Port Mode. This column will read Any (Any-to-Any), Modem, Passive, or Buffer, depending on the configuration selected for the port.
- **Buffer Count:** Lists the amount of data (in bytes) stored in the buffer for this port.

6.2. The Port Diagnostics Screen (/SD)

The Port Diagnostics Screen provides more detailed information about each port, including the port name and communication parameters. To display the Port Diagnostics Screen, access the command mode and type **/SD [Enter]**, the screen will appear as shown in Figure 6.2.

Like the Port Status Screen, the Port Diagnostics Screen is also available to both Supervisors and Users, and will appear slightly differently, depending upon whether the command mode was accessed with the Supervisor Password or a Port Password (User Mode).

In User Mode, the Port Diagnostics Screen will display only the status of those ports that share the same Port Password that was entered at login. Ports that are protected by other passwords will not be displayed.

```
PORT DIAGNOSTICS:  Version 2.00    Site ID: (undefined)

PORT |       NAME         | STATUS | BAUD | COM | HS  | MODE | BUF | CTS
-----+--------------------+--------+------+-----+-----+------+-----+-----
 01+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  H
 02+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 03+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 04+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 05+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 06+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 07+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 08+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
     |                    |        |      |     |     |      |     |
 09+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 10+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 11+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 12+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 13+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 14+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 15+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L
 16+ | (undefined)        | *Free  | 9600 | 8N1 | RTS | Any  |   0 |  L

Enter /H for Command Menu
```

Figure 6.2: The Port Diagnostics Screen (APS-16 Shown)

As shown in Figure 6.2, the Port Diagnostics Screen lists the following items:

- **Port:** The Port Number. Note that if this column contains a plus sign (**+**), this indicates that the port will be allowed to access the Supervisor Mode if the appropriate Supervisor Password is entered at login.
- **Name:** The user-defined name for each port.
- **Status:** The connect status for each port. When the port is connected, this column will list the number of the other port that is connected to this port. Note that if this column contains an asterisk, this indicates that the port has accessed the Command Mode.
- **Baud:** The baud rate selected for each port.
- **COM:** The Data Bits, Parity, and Stop Bits selected for each port. For example, "8N1" indicates Eight data bits, No parity, and One stop bit.
- **HS:** The handshaking (flow control) mode for each port.
- **Mode:** The user-selected Port Mode. This column will read Any (Any-to-Any), Modem, Passive, or Buffer, depending on the configuration selected for each port.
- **BUF:** Lists the amount of data (in bytes) currently stored in the buffer for this port.
- **CTS:** The High/Low status of the CTS line at the RS232 interface.

```
PORT PARAMETERS #03:

 1. Port Name:               (undefined)
 2. Password:                (undefined)
 3. Baud Rate:               9600
 4. Bits/Parity:             8-None
 5. Stop Bits:               1
 6. Handshake Mode:          RTS/CTS
 7. Port Mode:               Any-to-Any
    74. DTR Output:          Pulse
 8. Supervisor Mode:         Permit
 9. Logoff Character:        +
10. Sequence Disconnect:     Three Characters
11. Timeout Disconnect:      Off
12. Response Type:           Verbose
13. Command Echo:            On
14. Accept Break:            Yes

Enter: "<" previous port,
       ">" next port,
       <ESC> exit ...
```

Figure 6.3: The Port Parameters Screen (RS232 Port Shown)

6.3. The Port Parameters Screens (/W)

The /W command displays more detailed information about an individual APS port. Rather than listing connection information for all ports like the Port Status Screens, the Port Parameters screen lists all defined parameters for a specific port.

The /W command is available in both Supervisor Mode and User Mode. Note however, that when you log in with a Port (User) password, the APS will only display information regarding your resident port.

When Supervisor Mode is active, the Port Parameters Screens offer the option to either display or suppress Port Passwords. Normally, when /W is invoked, the Password field will read either "defined" or "undefined", depending upon whether or not the port's password has been specified. To display the Port Parameters Screen *with* the Port Password, type **/WP**, followed by the desired port number, and then press **[Enter]**. Note that the /WP command option is not available in User Mode.

The /W command uses the following format:

/W[P] xx [Enter]

Where:

P Is the command option to display port passwords. Note that when this option is included (e.g. **/WP 5**), the Port Parameters Screen will display the Port Password, if defined. (Supervisor Mode Only).

xx is the desired port number.

7. Operation

7.1. Any-to-Any Mode

Any-to-Any Mode Ports can be connected to other Any-to-Any, Passive, Buffer, or Modem Mode Ports by accessing Command Mode and issuing the /C Command. All ports can be configured for the Any-to-Any Mode.

7.1.1. Port Connection and Disconnection

The APS provides communication between devices without the requirement that both devices use the same communication parameters. This allows you to connect devices that use dissimilar baud rates, parity, handshake, and etc. The APS converts data rates and other parameters, eliminating the need to select common parameters for all connected devices.

7.1.1.1. Connecting Ports

Two different types of connections can be made between APS ports; Resident Connections and Third Party Connections.

- **Resident Connections:** Your resident port issues a /C command to connect to a second port. For example, Port 4 issues the /C command to connect to Port 5.
- **Third Party Connections:** (Supervisor Mode Only) Your resident port issues a /C command to create a connection between two *other* ports. For example, Port 1 is your resident port, and Port 1 issues a command to connect Port 2 to Port 3.

Note:

- Third Party Connections can only be initiated from a port with Supervisor Level command capability.
- If a port has accessed Command Mode using the Port Password (User Mode), then that port will only be able to connect to other ports that share the same port password.

To Connect ports, proceed as follows:

1. Access the Command Mode. If the Password Prompt is displayed, enter your Supervisor or Port Password.
2. Invoke the **/C** command to connect the desired ports.

   a) **Resident Connect:** To connect your resident port to another port, type **/C xx [Enter]**. Where **xx** is the number or name of the port you want to connect. The APS will display the numbers of the connected ports, along with the command sequence that will be required in order to disconnect the two ports.

   Example: To connect your resident port to Port 8, type **/C 8 [Enter]**.

b) **Third Party Connect:** (Supervisor Mode Only) To connect any two ports (other than your resident port), type **/C xx XX [Enter]**. Where **xx** and **XX** are two port names or numbers. The APS will display the numbers of the two connected ports.

Example: To connect Port 5 to Port 6, invoke the following command at a port with Supervisor Level command capability: **/C 5 6 [Enter]**.

When the /C command specifies the port name, it is only necessary to enter enough letters to differentiate the desired port from other ports. Type an asterisk (*) to represent the remaining characters in the port name. For example, to connect your resident port to a port named "SALES", the connect command can be invoked as **/C S***, providing no other port names begin with the letter "S".

7.1.1.2. Disconnecting Ports

There are three different methods for disconnecting ports, the Resident Disconnect, the Third Party Disconnect, and the No Activity Timeout. Providing the Timeout feature is enabled, a No Activity Timeout will disconnect resident ports *or* third party ports.

Note: Option 74 in the Port Parameters Menu determines how the DTR signal will react when the port disconnects. The DTR signal can either be held low, held high, or pulsed and then held high.

1. **Resident Disconnect:** Disconnects your resident port from another port. For example, if you are communicating via Port 3, and Port 3 is connected to Port 4, a Resident Disconnect would be used to disassociate the two ports. The APS offers two different Resident Disconnect command formats; the Three Character Format and the One Character Format (for more information, please refer to Section 5.5.3.):

   a) **Three Characters (Default):** Uses the format "**[Enter]LLL[Enter]**", where **L** is the selected Logoff Character. The Default Resident Disconnect Sequence is **[Enter]+++[Enter].**

   b) **One Character:** When the One Character Disconnect Sequence is selected, simply enter the selected Logoff Character once (Default = **+**). Note that it is *not* necessary to enter a carriage return before or after the Logoff Character.

   c) If the default Resident Disconnect Sequence is not compatible with your application, both the command format and Logoff Character can be redefined via the Port Configuration menus, as described in Section 5.5.

2. **Third Party Disconnect:** (Supervisor Mode Only) The /D command is issued from your resident port to disconnect two third party ports. For example, if your Resident Port is Port 1, a Third Party Disconnect would be used to disconnect Port 3 from Port 4.

   a) The /D command uses the format: **/D xx XX [Enter]**, where **xx** and **XX** are the numbers of the ports that you wish to disconnect.

   b) The /D (Disconnect) command can only be invoked by a port with access to Supervisor Level commands.

c) The /D command can specify both connected ports, or either of the two ports. For example, if Port 1 is your resident port, any of the following commands can be used to disconnect Port 3 from Port 4:

/D 3 4 [Enter]
or
/D 3 [Enter]
or
/D 4 [Enter]

3. **No Activity Timeout:** Providing the Timeout feature is enabled at either connected port, the No Activity Timeout can disconnect Resident Ports, *or* Third Party Ports.

   a) **RS232 Ports:** To configure the Timeout Feature for the RS232 Ports, invoke the /P command to display the Port Configuration Menu for the desired port as described in Section 5.5.3. Option 11 enables and defines the Timeout Feature.

   b) When the Timeout Feature is enabled, the port will automatically disconnect if no data is received for the defined Timeout Period.

7.1.2. Defining Hunt Groups

A Hunt Group creates a situation where the APS will scan a group of ports and connect to the first available port in the group. Hunt Groups are created by assigning identical or similar names to two or more ports. Hunt Groups can be defined using Any-to-Any, Passive, Buffer, or Modem Mode Ports.

1. Access the Command Mode. If the password prompt is displayed, enter the Supervisor Password.
2. Invoke the /P command to access the Port Configuration Menu for the desired Port(s) as described in Section 5.5.3. For example, to configure Port 4, type **/P 4 [Enter]**.
3. From the Port Configuration Menu, select item 1 to define the Port Name.
4. Repeat steps 2 and 3 above to assign identical names to the other ports in the Hunt Group. For example, a series of ports in a group could all be named "SERVER".
5. To connect to the next available port in the hunt group, invoke the /C command using the port name to specify the desired group. For example, **/C SERVER [Enter]**.
6. Your port will be connected to the first available port in the group. If all ports are presently connected, the APS will respond with the "BUSY" message.
7. It is only necessary to enter enough letters of the port name to differentiate the Hunt Group ports from other ports. Type an asterisk (*) to represent the remaining characters in the port name. For example, to connect your resident port to the first available port in a group of ports named "SALES1", "SALES2", and "SALES3", the connect command can be invoked as **/C S* [Enter]**, providing no other port names begin with the letter "S".

Hunt Group port names must be unique. Otherwise, ports with similar names will also be included in the Hunt Group.

Hunt Group Example 1:

1. Ports 1 and 2 are Modem Mode ports, and modems are installed at both ports. Port 1 is named "MODEM1" and Port 2 is named "MODEM2".
2. Your resident port is Port 4. To connect to the first available Modem, access the Command Mode and type **`/C MODEM*` [Enter]**.

Hunt Group Example 2:

1. Ports 3, 4, and 5 are Any-to-Any Mode ports. All three ports are named "SERVER".
2. Your resident port is Port 1, and you want to connect Port 2 to the first available server, access the Command Mode and type **`/C 2 SERVER` [Enter]**.

7.2. Passive Mode

Passive Mode Ports function the same as Any-to-Any Mode Ports, but do not allow access to Command Mode. A Passive Mode Port can communicate with other ports, but *cannot* enter Command Mode, and therefore cannot invoke commands to redefine port parameters, display status, and etc.

Passive Mode Ports can be connected by accessing the Command Mode from a free Any-to-Any Mode or Modem Mode Port, and invoking the Third Party Connect or Resident Connect Command as described in Section 7.1.1.2. Passive Mode ports will not buffer data, except during baud rate conversion.

Notes:

- A Passive Mode Port is not allowed to access the Command Mode.
- In order to ensure supervisor access to important command functions, the Passive Mode is not available to Ports 1 and 2 (SetUp Ports).

7.3. Buffer Mode

Ports configured as Buffer Mode ports will collect data from the connected device and store it in the APS's statically allocated memory. Each APS port features a fixed length, fixed position data buffer.

The Buffer Mode allows collection of data from various devices without the requirement that all devices use the same communication parameters (e.g. baud rate, parity, etc.).

Notes:

- Buffer Mode Ports cannot access the Command Mode.
- In order to ensure supervisor access to important command functions, the Buffer Mode is not available to Ports 1 and 2 (SetUp Ports).

7.3.1. Reading Data from Buffer Mode Ports

To retrieve data from Buffer Mode Ports, you must first determine which port buffers contain data. To check port buffers for stored data, access the Command Mode and type **/S [Enter]** to display the Port Status Screen.

To retrieve data from buffer memory, go to a free Any-to-Any or Modem Mode Port, access the Command Mode (Supervisor Level), and issue the /C command using the following format:

/C xx [Enter]

Where **xx** is the number or name of the port buffer to be read.

If the port's buffer is empty, the APS will send a message which reads "Connected xx, Buffer Empty"; where "xx" is the port number. If the buffer contains data, the APS will display a prompt that offers four options:

- **Next Screen:** To scroll through data one screen at a time, press the **[Space]** bar. Each time the space bar is pressed, the next full screen of data will be sent.
- **Scroll All:** To send all data without pausing, press **[1]**.
- **Skip/Connect:** To connect to the buffer port without sending stored data, press **[2]**.
- **Erase/Connect:** To connect to the buffer port and erase stored data, press **[3]**. Note that buffered data will be erased immediately and will not be sent.

  Note: All four of these options also allow pass-through communication with the device connected to the Buffer Mode port.

To clear data from the buffer, use the Erase/Connect option, or go to a free Any-to-Any or Modem Mode Port with Supervisor Level command capability, and issue the /E (Erase Buffer) command using the following format:

/E xx [Enter]

Where **xx** is the number or name of the port buffer to be cleared.

7.3.2. Port Buffers

The Status Screen lists the amount of Buffer Memory currently used by each port. The APS uses buffer memory in two different ways, depending on the user-selected port mode.

- **Any-to-Any, Passive, and Modem Mode Ports:** When two ports are communicating at dissimilar baud rates, the buffer memory prevents data overflow at the slower port.
- **Buffer Mode Ports:** Stores data received from connected devices. The user issues a connect command (/C) from an Any-to-Any Mode or Modem Mode port to retrieve data.

If the Status Screen indicates an accumulation of data, the /E (Erase Buffer) command can be invoked to clear the buffer.

7.4. Modem Mode

In addition to allowing data transfer, the Modem Mode also provides additional functions specifically related to modem communication. A Modem Mode Port can perform all functions normally available in Any-to-Any Mode. The Modem Mode is available to all APS RS232 ports.

When the Modem Mode is selected, the port configuration menu (command /P) will display three additional prompts, which allow the user to re-define the modem reset string, initialization string, and hang-up string.

When the Modem Mode is selected for a port with Supervisor Level command access, the Supervisor Password should be defined. This will discourage unauthorized access to higher command functions.

When a call is received, the unit will prompt the caller to enter a password. The APS allows three attempts to enter a valid password. If the correct password is not entered in three attempts, or if the user does not respond to the password prompt within 30 seconds, the modem will disconnect.

The password can be defined and enabled by invoking the /P command as described in Section 5.5.

Note:

- When a Modem Mode Port exits Command Mode, or the DCD line is lost while the Command Mode is active, the APS will pulse the DTR line to the modem. The unit will then send the user-defined modem command strings to make certain the modem is properly disconnected and reinitialized.
- When an external modem is installed at a APS port, other ports can use the modem for calling out. To call out, invoke the /C command to connect to the port, and then access the modem as you normally would.

8. Saving and Restoring Configuration Parameters

After the APS has been properly configured, parameters can be downloaded and saved as an ASCII text file. Later, if the configuration is accidentally altered, the file with the saved parameters can be uploaded to automatically reconfigure the unit without the need to manually assign each parameter.

Saved parameters can also be uploaded to other APS units. This allows rapid set-up when several units will be configured with the same parameters.

The "Save Parameters" procedure can be performed from any terminal emulation program (e.g. ProComm, Crosstalk, Hyperterminal, etc.), that allows downloading of ASCII files.

8.1. Sending Parameters to a File

1. Start ProComm and access the APS Command Mode. If the password prompt is displayed, enter the Supervisor Password.
2. When the APS command prompt appears, type **/U** and press **[Enter]**. The APS will prompt you to configure your terminal emulation program to receive an ASCII download. Set your terminal emulation program to receive an ASCII format download, and the specify a name for a file that will receive the saved parameters (e.g. APS.PAR).
3. When the terminal emulation program is ready to receive the file, return to the APS Save Parameter File menu, and press **[Enter]** to proceed with the download. APS parameters will be saved on your hard drive in the file specified in Step 2 above.
4. The APS will send a series of ASCII command lines which specify the currently selected APS parameters. The last line of the file should end with a "**/G-00**" command.
5. When the download is complete, type **/S** and press **[Enter]** to return to the main Status Screen.

8.2. Restoring Saved Parameters

This section describes the procedure for using ProComm to send stored parameters to the APS.

1. Start your terminal emulation program and access the APS Command Mode; if the password prompt is displayed, enter the Supervisor Password.
2. Configure your terminal emulation program to upload and ASCII text file.
3. Upload the ASCII text file with the saved APS parameters. If necessary, key in the file name and directory path.
4. Your terminal emulation program will send the ASCII text file to the APS. When the terminal program is finished with the upload, make certain to terminate the Upload mode.

   Note: If the APS detects an error in the parameters file, it will respond with the "Invalid Parameter" message. If an error message is received, carefully check the contents of the parameters file, correct the problem, and then repeat the Upload procedure.

5. Type **/S** and press **[Enter]**, the APS Status Screen will be displayed. Check the Status Screen to make certain the unit has been configured with the saved parameters.

9. Command Reference Guide

9.1. Command Conventions

The commands described in this section conform to the following conventions:

- **Slash Character:** Most APS commands begin with the Slash Character (**/**).
- **Apply Command to All Ports:** When the asterisk character is entered as the argument of the **/D** command (Disconnect Port), or the **/E** command (Erase Buffer) the command will be applied to all ports. For example, to erase all port buffers, type **/E * [Enter]**.
- **Port Name Wild Card:** It is not always necessary to enter the entire port name. Port names can be abbreviated in command lines by entering the first character(s) of the name followed by an asterisk (*****). For example, a port named "SERVER" can be specified as "**S***". Note however, that this command would also be applied to any other port name that begins with the letter "S".
- **Suppress "Sure?" Prompt:** When the **/D** (Disconnect Port), **/E** (Erase Buffer), or **/I** (Default and Test Unit) commands are invoked, the **/Y** option can be included in the command line to override the "Are you Sure (y/n)?" prompt. For example, to disconnect Port 8 without displaying the "Sure?" prompt, type **/D/Y 8 [Enter]**.
- **Enter Key:** All commands are invoked by pressing **[Enter]**.
- **Command Mode:** APS Ports will only recognize commands when the Command Mode has been activated. The Command Mode can be accessed from a free Any-to-Any or Modem Mode Port. To access the Command Mode, proceed as described in Section 5.1.
- **Connected Ports:** When two ports are connected, most APS commands will not be recognized by either of the connected ports. The only exception is the Resident Disconnect Sequence (Default = **[Enter]+++[Enter]**).
- **Configuration Menus:** To exit from a configuration menu, you must press **[Esc]** or **[Ctrl]**+**[X]**.

9.2. Command Response

When commands are sent to the APS, the unit can respond with either verbose (English Text) or terse messages (numeric / abbreviated). The default message type for all ports can be set to either terse or verbose using SetUp Switch Six.

After the unit is installed and configured, the port configuration command (/P) can specify an individual response format for each port. In addition to the Terse and Verbose response modes, the port configuration commands can also select the Quiet Mode. When the Quiet Mode is selected, the port will *not* send messages in response to commands.

The table below summarizes the various response messages for both the Terse and Verbose modes.

Terse	Verbose
0	OK
0	RAM Test Passed
1	Connected *
2	Busy
3	Disconnected
4	Invalid Command
5	Are You Sure (Y/N) ?
6	Invalid Parameter
7	Invalid Syntax
8	Invalid Access
9	Enter Site ID:
A	Aborted
B	Enter Password:
C	Invalid Password
D	RAM Test Failed at *
E	Inactivity Timeout, Disconnected
F	Data in Buffer from Previous Connection ... Re-Enter Logoff Sequence to Purge Buffer.
G	Asleep

* These verbose Response Messages include additional information not provided by terse Response Messages.

9.3. Command Summary

Function	Command Syntax	Command Availability	
		Supervisor	User
Enter Command Mode	**[Enter]**	X	X
Exit Command Mode	**/X [Enter]**	X	X
Help Menu	**/H [Enter]**	X	X
Display Site ID	**/J [Enter]**	X	X
Display Port Status	**/S[P] [Enter]**	X❶❷	X❶
Display Port Diagnostics	**/SD [Enter]**	X❶	X❶
Display Port Parameters (Who)	**/W[P] [n] [Enter]**	X❷	X❸
Set System Parameters	**/F [Enter]**	X	
Set RS232 Port Parameters	**/P <x> [Enter]**	X	
Copy RS232 Port Parameters	**/CP [Enter]**	X	
Connect	**/C <x> [x] [Enter]**	X	X❹
Resident Disconnect❺	**[Enter]+++[Enter]**	X	X
Third Party Disconnect❻	**/D[/Y] <x> [x] [Enter]** **/D[/Y] * [Enter]**	X	
Erase Buffer	**/E[/Y] <x> [x] [Enter]** **/E[/Y] * [Enter]**	X	
Default & Test	**/I[/Y] [Enter]**	X	
Save Parameters	**/U [Enter]**	X	

Notes:

❶ Supervisor Mode displays parameters for all ports; User Mode only displays parameters for ports allowed by Port Password.

❷ To display Port Passwords, include the “P” Option. (Supervisor Mode Only).

❸ A port with "User" command capability can only view its own parameters. A User Port *cannot* view parameters for other ports.

❹ A User Port *cannot* perform a Third Party Connect.

❺ Resident Disconnect: Disconnects your resident port from another port. Note that the Resident Disconnect Sequence can be redefined via the Port Configuration Menus.

❻ Third Party Disconnect: Disconnects two or more nonresident ports. Must be issued from a third port with Supervisor command capability.

9.4. Command Set

This Section provides more detailed information on all APS commands, sorted alphabetically by name.

[Enter] Enter Command Mode

In order to set parameters or connect ports, you must first access the command mode as described in Section 5.1. When the Command Mode is inactive (port asleep), the port will only respond when the **[Enter]** key is pressed without any characters preceding it. If the Supervisor Password (command /F) has been defined, the unit will require a password before allowing access to Command Mode.

Availability: Supervisor / User

Format: **[Enter]** (Press **[Enter]** twice if other characters have already been typed).

Response: The Port Status Screen will be displayed, followed by the "APS>" command prompt.

[Enter]+++[Enter] Resident Disconnect Sequence

The Resident Disconnect Sequence is issued to disconnect your resident port from another port. For example, if you are communicating via Port 3, and Port 3 is connected to Port 4, the Resident Disconnect Sequence would be used to disconnect Port 3 from Port 4. Although the default Resident Disconnect Sequence is **[Enter]+++[Enter]**, the command format and Logoff Character can also be redefined via the Port Configuration Menus as described in Section 5.5.3. Note that a one character disconnect command can also be selected.

Availability: Supervisor / User

Format: **[Enter]xxx[Enter]**
Where "**x**" is the selected Logoff Character, and the default character is "**+**".

Response:

Verbose: The APS will send the "Disconnected" message, followed by the Port Status Screen.

Terse: 3

/C Connect

Establishes a bi-directional connection between two ports. For more information and command line examples, please refer to Section 7.1. There are two different types of port connections:

- **Resident Connect:** If the /C command specifies one port name or number, your resident port will be connected to the specified port.
- **Third Party Connect:** If the /C command specifies two port names or numbers, the unit will connect the two ports indicated. A Third Party Connect command must be issued from a third port with "Supervisor" command capability. "User" ports *cannot* initiate a Third Party Connect.

Note:

- Ports with "User" command capability can only connect to ports that share the same Port Password.
- Ports with "Supervisor" command capability are allowed to connect to all other ports.

Availability: Supervisor / User

Format: `/C <x> [x] [Enter]`
Where **`x`** is the number or name of the port(s) to be connected.

Response:

Verbose: Connected **`xx`**, when a Resident Connection is initiated, the APS will also display the currently selected Resident Disconnect Sequence for your port.

Terse: 1

/CP Copy RS232 Port Parameters

Allows quick set-up when all APS RS232 ports will be configured with the same or similar parameters. When the /CP command is invoked, the APS will display a menu that is used to select common port parameters, which can then be copied to all APS RS232 ports. For more information, please refer to Section 5.6.

Availability: Supervisor Only

Format: `/CP` [Enter]

Response: Displays Copy Parameters Menu

/D Third Party Disconnect

Invoke the /D command at your resident port to disconnect two other ports. The /D command cannot be used to disconnect your resident port. To disconnect your resident port, issue the Resident Disconnect Sequence or wait for the Timeout Period to elapse (if enabled).

Availability: Supervisor Only

Format: `/D[/Y] <x> [x] [Enter]`
Where:

`/Y` (Optional) suppresses the "Sure?" prompt.

`x` Is the number or name of the port(s) to be disconnected. To Disconnect all ports, enter an asterisk.

Response:

Verbose: "Are you Sure (y/n)?", if Y, unit will respond with "Disconnected".

Terse: 5, if Y, unit will respond with 3.

Example: To disconnect Port 2 from Port 3 without the "Sure?" prompt, access the Command Mode from a third port with "All" command capability and type one of the following commands:

`/D/Y 2 [Enter]` or **`/D/Y 3 [Enter]`**

/E Erase Buffer

Erases data from the buffer for a specified port or several ports. Note that erased data *cannot* be recovered.

Availability: Supervisor Only

Format: `/E[/Y] <x> [x] [Enter]`
Where:

`x` is the number or name of the port buffer(s) to be cleared. To erase buffers for all ports, enter an asterisk.

`/Y` (Optional) Suppresses the "SURE? (Y/N)" prompt.

Response:

Verbose: "Are You Sure (y/n)?", if Y, the unit will respond with "OK".

Terse: 5, if Y, the unit will respond with 0.

Example: To clear the buffer for Port 3, access the Command Mode from a port with "All" command capability, and type **`/E 3 [Enter]`**.

/F Set System Parameters

Displays a menu which is used to define the Site ID message and Supervisor Password. When the Supervisor Password is defined, the APS will display a password prompt before allowing access to command mode. For more information, refer to Section 5.4.

> **Note:** Make certain to record your Supervisor Password for future reference. If the Supervisor Password is lost or forgotten, you will not be able to access Supervisor Level commands.

Availability: Supervisor Only

Format: `/F` [Enter]

Response: Displays System Parameters Menu

/H Help

Displays a Help Screen, which lists all APS commands along with a brief description of each command.

Availability: Supervisor / User

Format: `/H` [Enter]

Response: Displays Help Screen. Note that the User Level Help Screen does not include Supervisor Level Commands.

/I Default and Test

Tests internal memory and initializes the unit with the default parameters specified by the SetUp Switches.

> **CAUTION: When `/I` is invoked, the APS will revert to the parameters specified by the SetUp Switches. Command selected parameters will be lost.**

Availability: Supervisor Only

Format: `/I[/Y]` [Enter]
Where **`/Y`** is a command option used to suppress the "Sure?" prompt.

Response:
Verbose: "Are You Sure (y/n)?", if Y, memory test and initialization begins.
Terse: 5, if Y, memory test and initialization begins.

/J Display Site ID

Displays the user-defined Site I.D. message.

Availability: Supervisor / User

Format: `/J` [Enter]

Response: Displays Site I.D. Message

/P Set RS232 Port Parameters

Displays a menu which allows the user to select options and parameters for the selected port. Section 5.5.3 describes the procedure for defining port parameters.

Availability: Supervisor Only

Format: `/P [x]` [Enter]
Where **`x`** is the number or name of the port to be configured. If the port number or name is not specified, the APS will display the configuration menu for your resident port.

Response: The Port Parameters Menu is displayed.

/S Display Port Status

Displays the Port Status Screen, which lists current conditions and parameters for all ports. Normally, the Port Status Screen will not display Port Passwords; the Password column will read either "defined" or "undefined", depending upon whether or not the password for each port has been specified. When the Supervisor Mode is active, the /SP command offers the option to either display or suppress Port Passwords. In User Mode, the /S command will only display information for the ports that share the same password entered at login. For more information on the Port Status Screen, please refer to Section 6.1.

Availability: Supervisor / User

Format: `/S[P]` [Enter]
When the "P" option is included (e.g. **`/SP`**), the Port Status Screen will lists the password for each port, if defined. (Supervisor Mode Only).

Response: Displays Port Status Screen

/SD Display Port Diagnostics

Provides more detailed information regarding the operational status of each port. Note that in User Mode, this screen will only display parameters for the ports that are allowed by the Port Password that was entered at log in. For More information on the Port Diagnostics Screen, please refer to Section 6.2.

Availability: Supervisor / User

Format: `/SD` [Enter]

Response: Displays Port Diagnostics Screen

/U Save Parameters

Sends APS configuration parameters to an ASCII text file as described in Section 8.

Availability: Supervisor Only

Format: `/U` [Enter]

Response: The APS will send a series of command lines.

/W Display Port Parameters (Who)

Displays configuration of an individual port, but does not allow the user to change parameters. Ports with User Level command capability cannot display parameters for other ports. Normally, the Port Parameters screen will not include the Port Password. Note however, that when the Supervisor Mode is active, the /WP option can be used to display the password for the target port. For more information, please refer to Section 6.3.

Availability: Supervisor / User

Format: `/W[P] [x] [Enter]`
Where:

- **`P`** When the "**`P`**" option is included (e.g. **`/WP 5`**), the Port Parameters screen will list the password for the port, if defined. (Supervisor Mode Only).
- **`x`** Port number or name. If the "**`x`**" argument is omitted, parameters for your resident port will be displayed.

Response: Displays port parameters.

Example: To display parameters for a port named "SERVER", access the Command Mode from a port with Supervisor Level command capability, and type **`/W SERVER [Enter]`**.

/X Exit Command Mode

Exits Command Mode. When issued at the Net Port, also ends the telnet session. Note that exiting from Command Mode will not terminate port connections.

- **Any-to-Any Mode:** Exits Command Mode.
- **Modem Mode:** Disconnects and resets modem, hang-up message is sent, hardware line to modem drops for 500 ms, and modem reset string is sent.

Availability: Supervisor / User

Format: `/X [Enter]`

Response: Disconnected

A. RS232 Port Interface

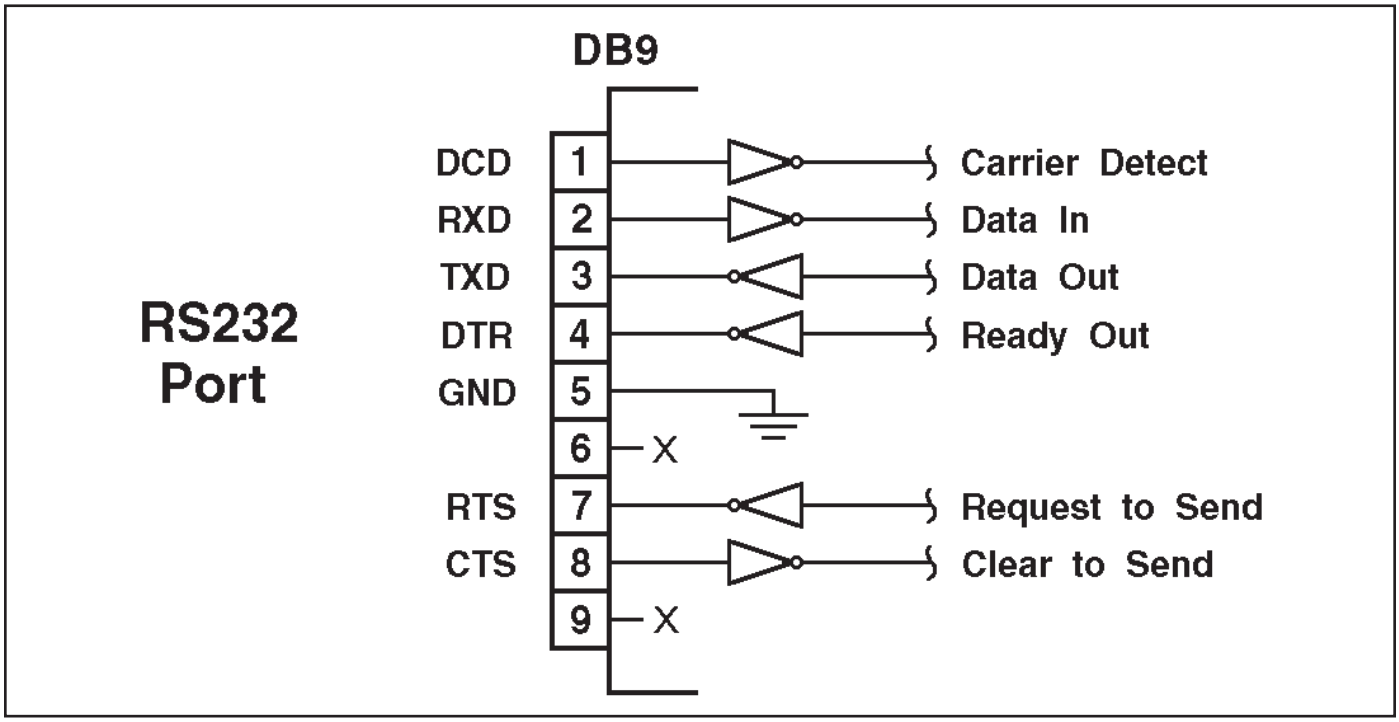

Figure A.1: RS232 Port Interface

DCD and DTR hardware lines function as follows:

1. When connected:

   a) If either port is set for Modem Mode, the DTR output at either port reflects the DCD input at the other end.

   b) If *neither* port is set for Modem Mode, DTR output is held high (active).

2. When not connected:

   a) If the port is set for Modem Mode, upon disconnect DTR output is pulsed for 0.5 seconds and then held high.

   b) If the port is *not* set for Modem Mode, DTR output is controlled by the DTR Output option (Parameters Menu, Option 74). Upon disconnect, Option 74 allows DTR output to be held low, held high, or pulsed for 0.5 seconds and then held high.

B. Specifications

RS232 Port Interface:

Model APS-16: Sixteen (16) RS232 serial inputs use DB9 connectors configured as DTE ports.

Model APS-8: Eight (8) RS232 serial inputs use DB9 connectors configured as DTE ports.

Coding: Asynchronous, 7/8 bits ASCII.

Parity: Even, Odd, None

Stop Bits: 1 or 2.

Data Rate: 300 to 115.2K bps (standard rates).

Flow Control: XON/XOFF, RTS/CTS, Both, or None.

Timeout: No activity timeout disconnects port. 1, 5, 10, 15, 30 seconds, 1, 5, 15, 30, 90 minutes.

Memory: Stores Parameters and captured data. Non-volatile 512K SRAM buffer memory. Statically allocated.

Break: Accept Break or Refuse Break

SetUp Switches: 8 position, sets default parameters for baud rate, flow control, response message format, and command echo.

LEDs: On, Ready, Activity (for each RS232 Port).

Temperature: 0°C to 45°C (operating)

Power:

AC Version: IEC-32 Inlet, 115/230 VAC, 50/60 Hz, 5 watts

DC Version: Terminal Strip, -48 VDC, 0.2 Amp Max.

Size: 1.8" x 17" x 6.8" (H x W x D)

Weight: 8 lbs. shipping weight

Humidity: 10 to 90% RH, Non-Condensing

Venting: Side vents are used to dissipate heat generated within the unit. When mounting the unit in an equipment rack, make certain to allow adequate clearance for venting.

C. Customer Service

Customer Service hours are from 8:00 AM to 5:00 PM, PST, Monday through Friday. When calling, please be prepared to give the name and make of the unit, its serial number and a description of its symptoms. If the unit should need to be returned for factory repair it must be accompanied by a Return Authorization number from Customer Service.

WTI Customer Service
5 Sterling
Irvine, California 92618
949-586-9950
Toll Free: 1-800-854-7226
Email: service@wti.com

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